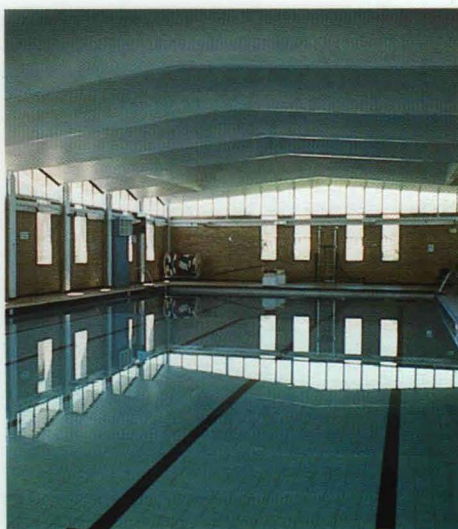
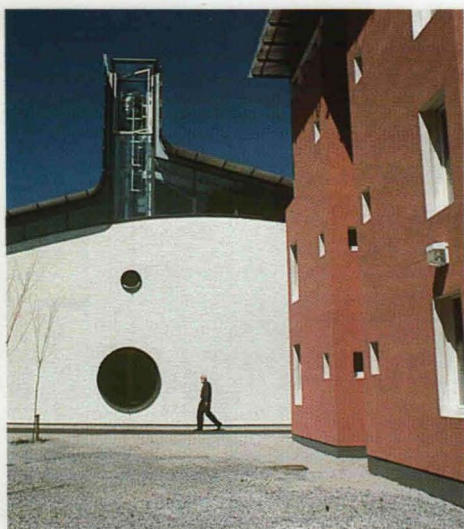


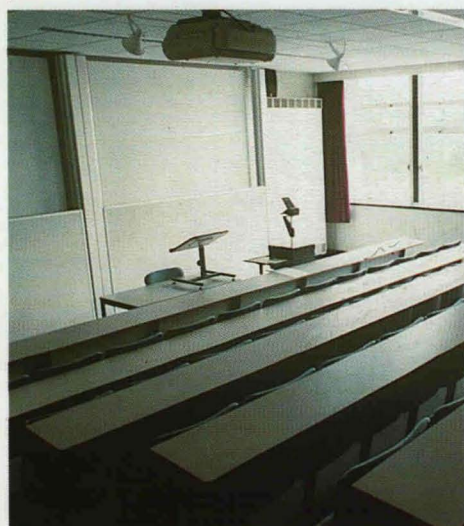
Educated energy

Good housekeeping in further and higher education buildings



A Guide for energy managers,
highlighting:

- the cost benefits
- the energy-saving and environmental benefits
- that no capital investment is needed
- that immediate operation will have immediate effects.



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ENERGY EFFICIENCY

BEST PRACTICE
PROGRAMME

INTRODUCTION

Further and higher education establishments are complex organisations, with multiple activities happening almost continuously. In these circumstances it is all too easy for students and staff to take it for granted that someone else will take care of the energy bills, and that the individual need have no concern about energy efficiency. One of the major tasks facing most facilities/energy managers is the difficulty in persuading students and staff to take energy efficiency seriously and to adopt simple methods of saving energy.

A large part of the energy manager's job is to convey the message about good housekeeping to students and staff. Savings of at least 10% of energy costs can be easily achieved if everyone observes a few simple rules, which in fact are no more than common sense. The problem for the energy manager is to make people aware of these rules and to ensure that they are applied in a consistent and sustained way.

This Guide has been written to help the energy manager to convey the message about good housekeeping in a way that is tailored to the specific circumstances of the further and higher education sector. The inserts in the back pocket have been designed to be used – with the minimum of changes – to promote the good housekeeping message to those involved in the wide variety of activities to be found in a college, including cleaners, maintenance staff and senior management, as well as students and academic staff.

The inserts have been narrowly targeted, and combine:

- checklists – aimed at various readers, and which can be tailored to suit your local conditions
- cartoon-style illustrations – to use as fliers or posters to put across the good housekeeping message in a humorous and relevant style.

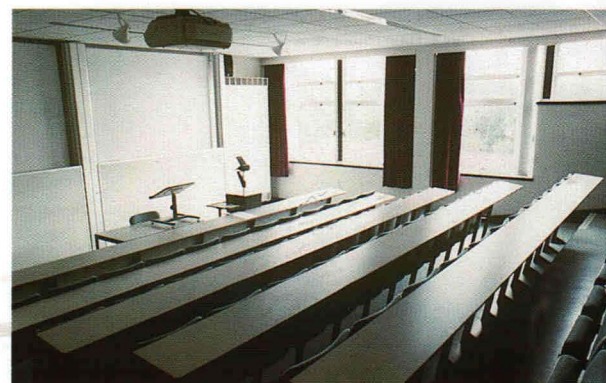
Good Practice Guide 172 'Marketing energy efficiency – raising staff awareness' provides a well-thought-out approach to running an energy efficiency campaign and will assist your use of this Guide.

The role of the energy manager

The energy manager of a further or higher education establishment has a pivotal position in bringing about energy efficiency by good housekeeping. It is also a most challenging role because the typical campus will contain a wide range of facilities such as offices, kitchens and cafeterias, sports halls, laboratories, lecture theatres and residential accommodation. Successful precedents have shown that the following actions will help you achieve your goal.

- Obtain commitment and backing from senior management.
- Carry out regular maintenance to ensure that all the building services are operating properly and that the building fabric is in good condition.
- Obtain reliable energy data by instigating a monitoring and targeting (M&T) programme.
- Educate and motivate the key parties in the college.
- Establish a network of energy wardens.
- Raise the general level of awareness of good housekeeping.

These points are explained in the following pages.



A lecture theatre at Birmingham University

SENIOR MANAGEMENT

SENIOR MANAGEMENT

It is likely that you have already targeted this group to obtain their approval, in principle, for an energy efficiency drive. It is essential that you:

- achieve formal recognition at a senior level of the important contribution good housekeeping can make to energy management on campus
- prepare strategic plans and develop good interdepartmental communication about energy issues
- establish a management system to identify current good practice and monitor progress (particularly important if you have already been engaged in ad hoc good housekeeping)
- obtain authority and back-up to allow you to carry out your job as effectively as possible
- are aware of how each part of the establishment can be approached individually, while recognising that there is greater potential for success when there is cooperation and liaison between the various faculties and schools.

The trend to devolve costs to departments is increasing, so senior and local management will be more likely to take an interest in energy use. Departmental heads can be advised that by promoting good housekeeping as soon as possible their liability under a new regime of devolved costs will be reduced.

The image of the establishment as environmentally concerned is something that is increasingly important. Not only student applicants but also the local community will be looking to you to set an example on environmental matters.

MAINTENANCE PROCEDURES

Lack of maintenance will lead to user complaints, and the inefficient use of energy. If other users are given the impression that the estates department is working hard to achieve high maintenance and efficiency standards they will be more easily persuaded to follow this example.



The new student cafeteria at Cheltenham and Gloucester College of Higher Education

Good maintenance management relies on keeping records, which fall into two broad categories:

- installation records
- service records.

Make sure that technical personnel who are involved in implementing operational or maintenance measures understand the principles of good housekeeping. It has been shown that a successful approach to maintaining performance is to develop a 'standards' document. This lays down the energy performance standards that have to be met by the services, and that these should be recorded at maintenance intervals. Similar standards can apply to the procurement of new equipment and plant, to ensure that it has not only low operating costs, but low maintenance costs.

Also make sure that the correct operating conditions are recorded on the equipment control panels – for example, stickers to indicate the appropriate set points for thermostats, valve settings, pump selection, wintertime and summertime conditions. This enables operators to check operating conditions quickly.



MONITORING AND TARGETING

MONITORING AND TARGETING

The success of any good housekeeping campaign can be judged only against the amount of energy saved through its application. By monitoring energy consumption on campus an appraisal of the housekeeping programme can be made, and feedback on any achievements will increase its effectiveness. For maximum impact, therefore, a monitoring and targeting (M&T) system is essential. You will find it helpful to refer to 'Energy Management Study in the Higher Education Sector – Management Review Guide' and the accompanying M&T method (see Further Reading for details).

The extent to which M&T has been conducted on the campus will determine how it is integrated into the organisational structure of the college. The assignment of energy costs to departments or services within the establishment is likely to be a driving force towards more comprehensive M&T.

When considering energy use, it is important to monitor the actual energy used and not just the cost of the fuel, because changing fuel prices can mask the real energy consumption figures. For example, in recent years the substantial reductions in gas prices may be taken to indicate more efficient fuel usage. However, this may not be the true situation, and meeting future bills may become problematic if prices increase.

Allied to this is the adoption of suitable performance indicators in the form of 'benchmarks' against which to measure overall energy efficiency. Benchmarks can be constructed by combining the consumption figures of several similar establishments and sorting them, for example, into 'good', 'fair' and 'poor' categories. The dividing lines between

'good' and 'fair' and between 'fair' and 'poor' are of necessity somewhat arbitrary, but benchmarks do give a general indication of the level of performance. For a detailed explanation on benchmarks in the further and higher education sector please refer to 'Energy efficiency in further and higher education – cost-effective low energy buildings' (ECON 54) (see Further Reading).

In recent years there has been a very significant increase in the numbers of staff and students in most further and higher education establishments. This will tend to increase energy usage in those areas where consumption depends on numbers of people. Performance indicators and normalised performance indicators are essential if an accurate picture of the energy use is to be obtained.

EDUCATION AND MOTIVATION

There are two important factors that determine the likely response of your colleagues to a good housekeeping campaign – knowledge and motivation. First, it is important to educate all staff and students about how their efforts can help to save energy, but second they must be motivated to act in accordance with this knowledge. 'Marketing energy efficiency – raising staff awareness' provides detailed advice on promoting a good housekeeping campaign (GPG 172).

It is probable that many occupants will take energy for granted, and will not be aware of either how much the energy costs, or how it is used around the campus. The full facts about energy consumption in your establishment should be the starting point for your education and motivation campaign. In doing this it may be necessary to inform your target population that there is such a post as energy manager and that it is an important position within the establishment.

The motivational messages used may vary, depending on the staff involved. For example, academic staff can be shown how good housekeeping around the campus reduces the university's impact on the environment, but they can also be made aware of the relationship between money available from energy savings and the possibility of investing in increased research facilities. Senior management should be told of the savings that may be possible if they support you in your efforts to keep on top of energy consumption.



'Heating request' button



Lighting is controlled by a daylight sensor

ENERGY WARDENS

ENERGY WARDENS

It will not be possible for the energy manager alone to implement and maintain a good housekeeping campaign. It is important to develop a network of representatives of the staff (both academic and support) and students to assist with the good housekeeping initiative. Designated 'energy wardens' have been shown to be a successful conduit for information – both from the energy manager to the staff and students, and vice versa.

Energy wardens may be chosen from widely differing key groups within the college. The intention is that they should look out for instances of inefficient use of energy while they are engaged in their usual occupations – being an energy warden is not a separate function. The energy manager should take the wardens on an energy 'walk-round' to familiarise them with the opportunities for energy saving within their sphere of operation. Examples of key groups who could make a valuable contribution to the monitoring process are given below.

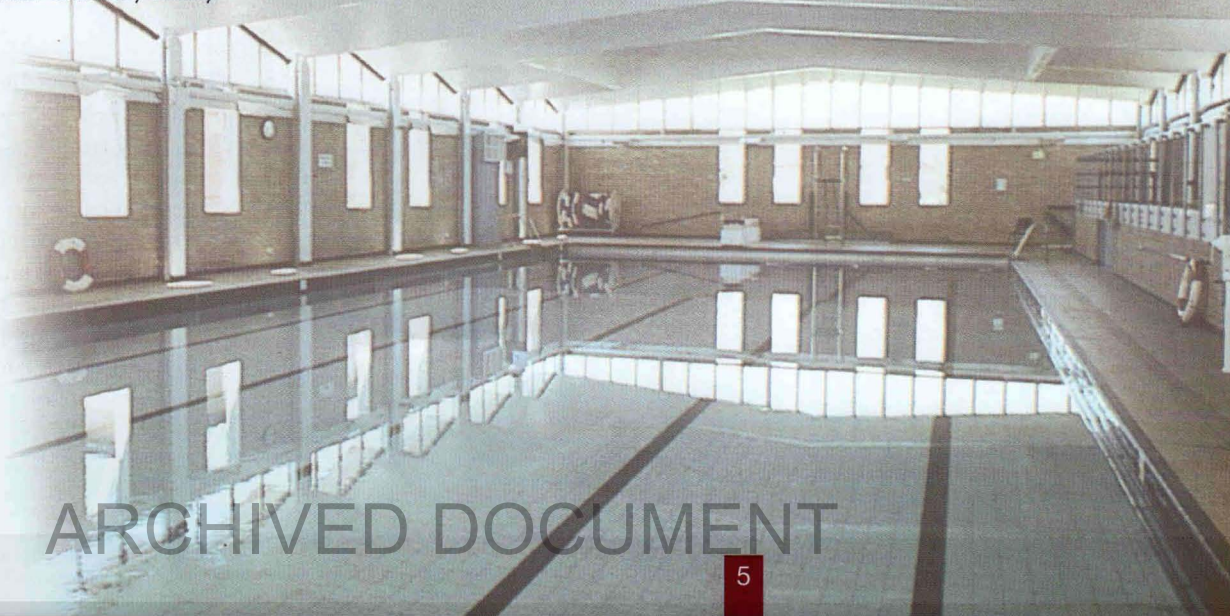
- **Cleaning staff** have access to the whole campus and can be asked to note, for example, faulty lighting, and to monitor spaces with intermittent usage, such as lecture theatres, where lighting may be inadvertently left on until the next day by teaching staff. This encourages them to be a part of the good housekeeping process.
- **Students in residential accommodation** are the main users of energy in halls of residence and can be easily targeted. It is most likely that environmental issues will be the most effective motivator of the students – particularly if they are not paying for their energy.
- **Plant operators** – those responsible for operating heating and ventilation plant – can have a huge impact on the energy efficiency of the campus. They can assist with the M&T programme by taking meter readings and recording plant operating conditions.
- **Laboratory technicians** are influential within science and engineering laboratories, which often use a large number of energy-consuming appliances. Distillation stills, ovens and autoclaves are good examples, and laboratory staff can help in controlling these heavy energy users.



Distilled water still



Birmingham University library



CASE STUDIES

Case Study

1 Glasgow University – Energy Awareness Days

An 'energy awareness day' campaign, with widespread publicity through leaflets and articles in the university's press, exhorted staff and students to save energy by good housekeeping on that particular day. This led to a 13% saving across various departments on the day. If maintained across the university this would result in a saving of £300 000 per year. A subsequent event was held the following year but was expanded to a week-long campaign. The fliers, leaflets and brochures were designed as part of a marketing student's project, in liaison with the media studies department. The project include a Web page with an e-mail address for comment and suggestions. A £50 prize was offered for the best energy-saving suggestion of the week. The campaign produced permanent savings of almost 10%.

The following examples show how some energy managers have achieved energy saving by low-cost and no-cost measures.

Case Study



2 Glasgow University – good housekeeping campaign

A good housekeeping campaign, concentrating on switching off lights and equipment, was carried out in the geology department of Glasgow University. This, coupled with the installation of compact fluorescent lamps (CFLs) instead of tungsten lamps, showed savings of 20%. Energy monitors were appointed to assist the project.

Case Study

3 University of Hertfordshire – Curriculum Campaign

In an innovative three-day staff development programme, 20 members of staff from all seven schools of the University of Hertfordshire attended an event which was based on the Learning Agenda for Sustainability, as developed by the Council for Environmental Education. The programme dealt with all aspects of the environment, including energy. Six months after the workshop a review of the activities implemented by the delegates showed that all the attendants had introduced elements of the programme into their curriculum.

Case Studies

Case Study



4 York University – catering

Monthly energy consumption by York University catering facility was recorded for a 12-month period. For the following 12 months the mechanical services engineer attended the regular chefs meetings and delivered one-hour training sessions on saving energy by good housekeeping. The chefs then carried out follow-on training of their own staff, based on this material. In this second year monitored savings of 25% were achieved.

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Cooking

Use gas rather than electricity wherever possible

Electricity costs up to seven times as much as gas per unit, and its generation produces more carbon dioxide (CO₂) per unit.

Do not use cooking equipment for space heating

The electricity used by a 9 kW electric oven left on for 12 hours costs about £7.50.

Keep lids on pans

This reduces the energy used.

Most cooking equipment takes only ten minutes to warm up

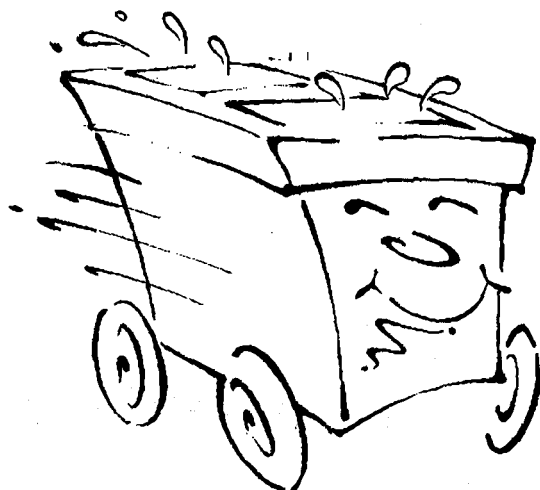
Leaving hobs and ovens on wastes energy and makes the kitchen too hot for comfort.

Use a microwave oven rather than the main ovens to reheat small quantities of food

Leaving an electric oven on for one hour is equivalent to buying three pints of milk.

Clean grease filters every day

Remember, a dirty grease filter can be a fire hazard.



Dish washing

Make sure taps are turned off fully when not in use

Do not keep hot taps running to clean utensils – leave them to soak.

Run dishwashers only when fully loaded

A single full load is more efficient than a number of small loads.

Repair leaks and replace washers

Leaks and dripping taps are wasteful of both water and energy.

Electrical appliances

Make sure that new electrical appliances are energy efficient

The energy efficiency of electrical appliances varies considerably from model to model.

Ensure that doors to freezer stores and refrigerators are not left open unnecessarily

Lighting

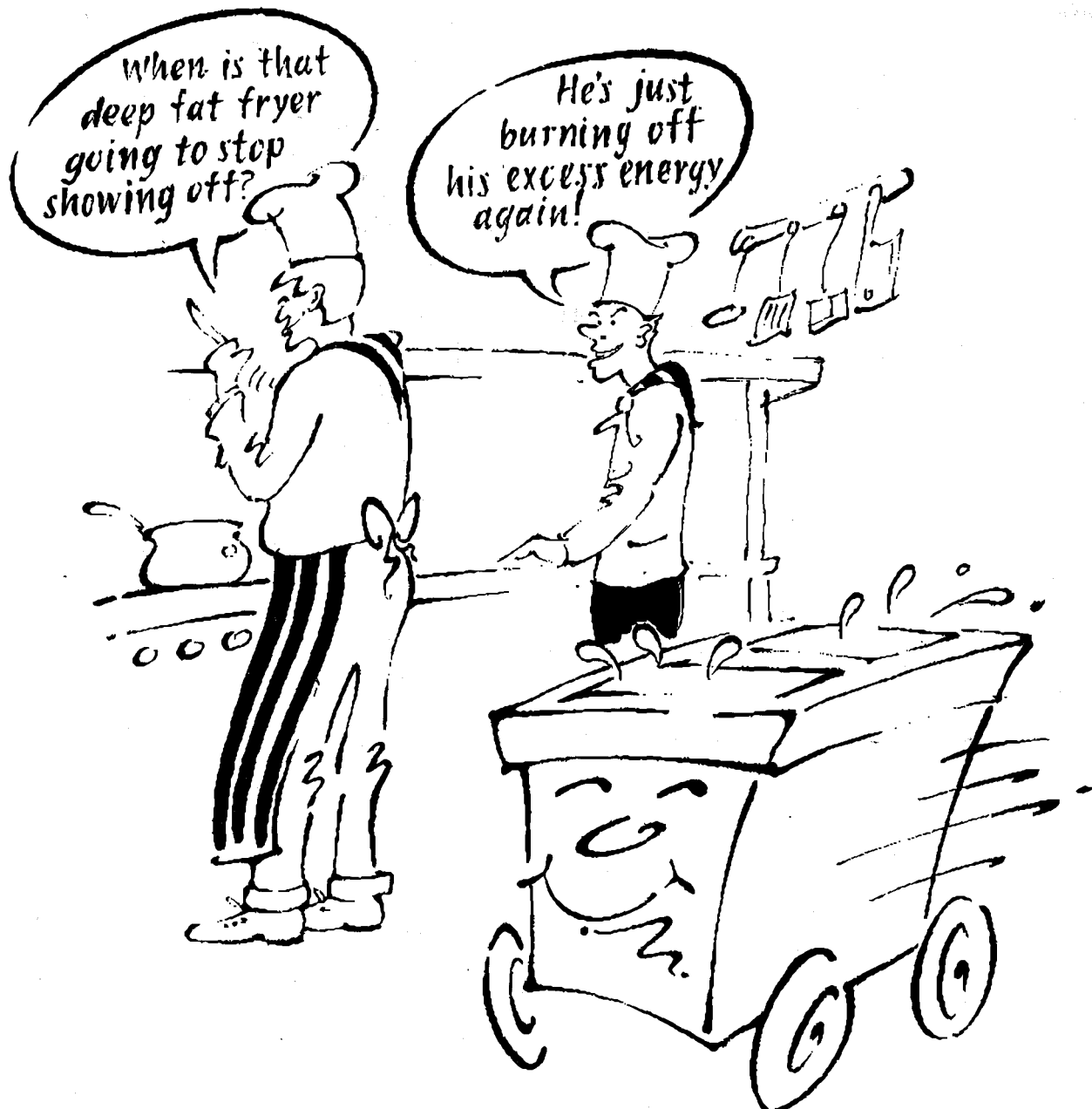
Turn off lighting in customer areas outside opening hours

Ensure that someone is responsible for switching off lights in each room or area when not in use.

Turn off lighting in storage areas when not required

Label or colour-code light switches to enable this.

Does it need to be switched on?



Remember

*a deep fat fryer when switched on uses
as much energy as a van doing 40 mph*

Challenge energy waste



Adopt good housekeeping

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Cleaners have a special part to play in saving energy around the campus. They are the only people who see all of the site every day, and especially the details. They should pay particular attention to the following points:

Report windows and doors that do not close properly

Draughts are uncomfortable and encourage the use of extra heating.

Remove obstructions from around radiators

If the radiator is not emitting heat efficiently, energy is wasted in raising the temperature of the room to an acceptable level.

Check that lights are switched off in lecture areas and teaching rooms at the end of the teaching day

Leaving lights on in an unoccupied lecture theatre is as wasteful as leaving a heater on in summer.

Switch lights on only when and where needed

The generation of electricity is responsible for acid rain and contributes to global warming.

Turn off lights when you have finished the cleaning

Leaving lights on when not wanted – even in a small room – can cost almost £200 a year.

Do not try to speed up the drying of floors by opening windows

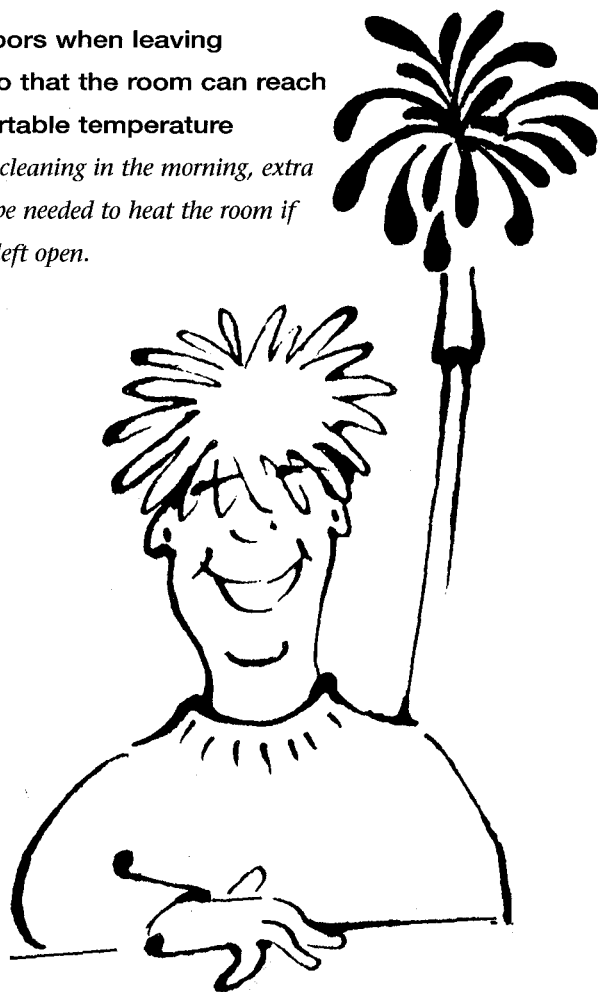
This allows heat to escape, and the floor will dry anyway.

Limit your use of hot water and do not leave taps running to wash mops

The cost of running a hot tap is about £1.50 an hour.

Close doors when leaving rooms so that the room can reach a comfortable temperature

If you are cleaning in the morning, extra time will be needed to heat the room if doors are left open.



You know energy needs to be managed



Do others?

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Policy

Ensure that senior management knows of the energy-saving benefits of good housekeeping

Without the commitment of senior management your task will be much more difficult.

Help senior management and other staff to develop a green charter

Use a holistic approach to reducing the college's environmental impact.

Suggest the formation of a green group within the college

Remember that staff motivation may depend on factors that are not always financial in nature.

Raise the profile of energy

Write articles for your college magazine.

Conduct an energy survey to identify no-cost and low-cost opportunities

Have a number of energy projects ready in case funds become available.

Cleaners

Arrange for the cleaners to come in at the end of the day when the buildings are already heated and ask them to report back on good housekeeping problems

Monitoring and targeting (M&T)

Pursue M&T in as many areas of the college's energy consumption as time, appropriate staff and sub-metering will allow. Are you using the energy benchmarking software available from the Higher Education Funding Council?

Do you know how much electricity and fossil fuels you use?

Knowing only the cost of the fuel can mask the actual energy use because of changes in tariff.

Remember that electricity costs up to seven times as much as gas per kWh.

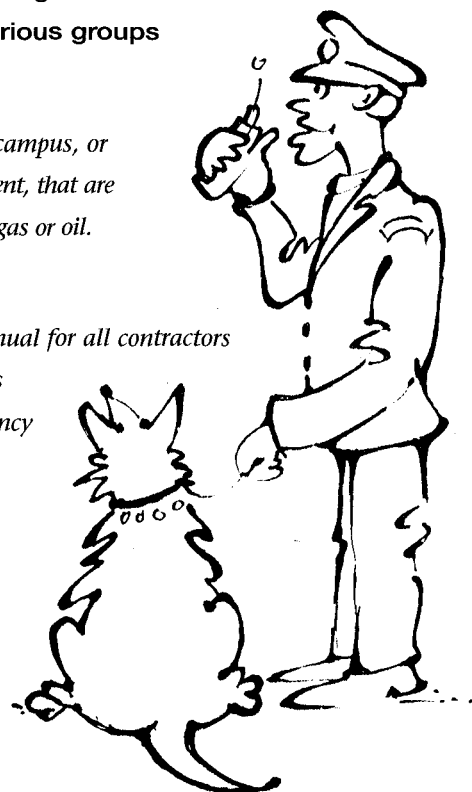
Encourage senior management to create the mechanisms for regular feedback from and between the various groups

Heavy usage audit

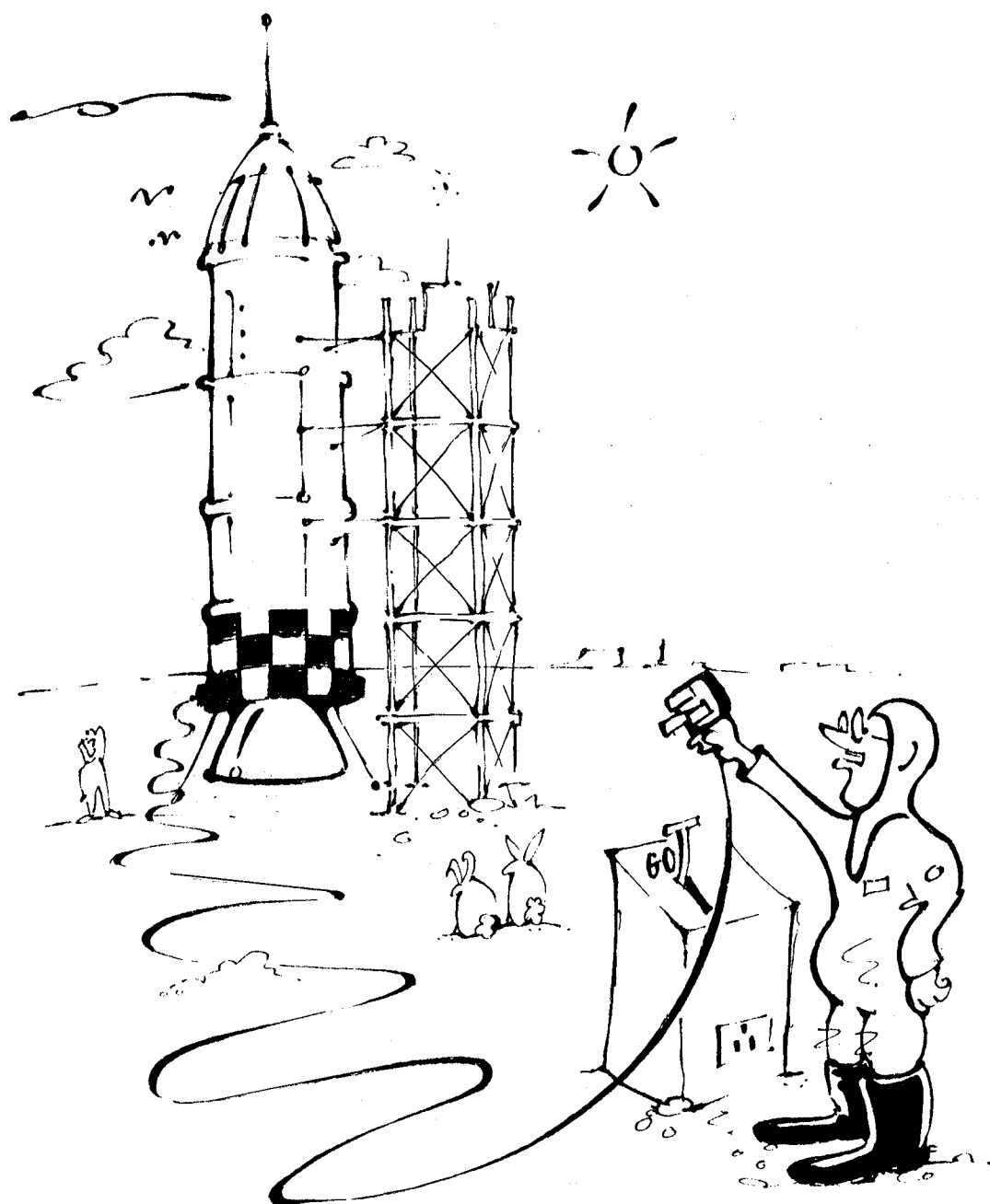
Investigate areas of the campus, or specific items of equipment, that are heavy users of electricity, gas or oil.

Standards manual

Prepare a standards manual for all contractors and suppliers which lays down your energy efficiency requirements.



Does it need to be switched on?



Save your energy for

Research

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Switch off PCs, VDUs and printers when not in use

If you cannot turn the computer off, switch off the screen – this saves over 50% of the energy.

Check that thermostats in animal houses and greenhouses are set to the specified temperatures

These are heated to high temperatures, are highly ventilated and can be very costly to operate.

Report problems with heating and ventilation promptly to maintenance staff

Make sure that refrigeration equipment is not set to a lower temperature than is necessary for the specimens being stored

Keep refrigerators as full as possible, and try to avoid large numbers of almost empty refrigerators.

Distillation still

These use a considerable amount of electricity – try to avoid unnecessary use.

Monitor use of fume cupboards

Remember they use electricity to power fans and also increase the heated fresh air requirements for the laboratory.

Heat soak ovens

Check the thermostats regularly for correct operation and also check the integrity of the insulation.

Check for leaks and pressure loss in pneumatic piping

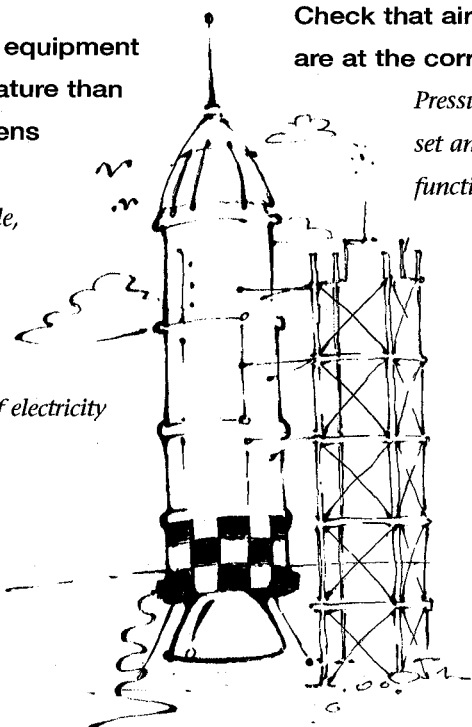
Perform a no-load test regularly to check for leaks.

Check that air pressure storage vessels are at the correct level

Pressure switches should be correctly set and all pressure-regulating valves functioning properly.

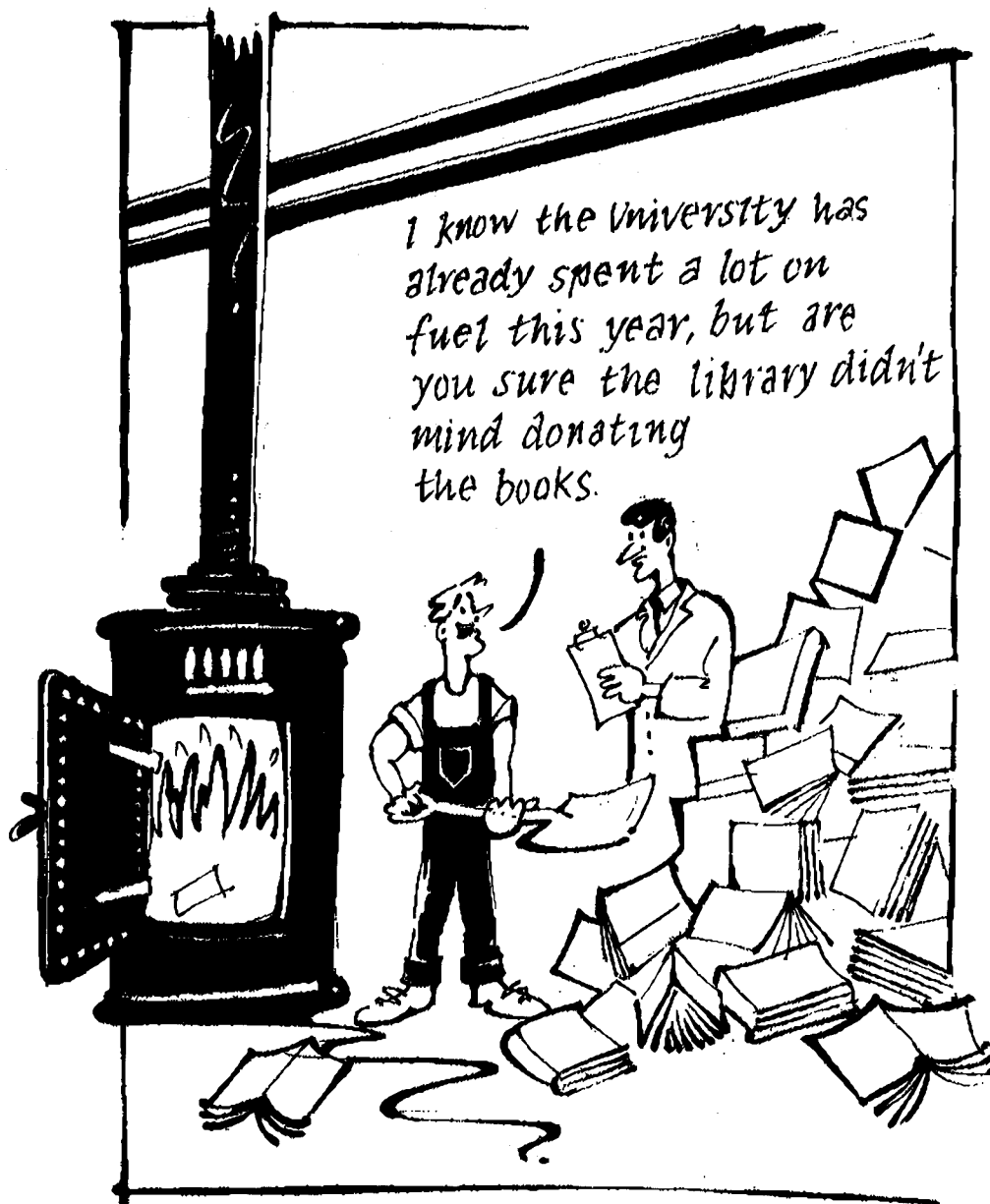
Recharge batteries, forklift trucks, etc at night when electricity is cheaper

Shut down all test rigs when not required



**Warning: before undertaking any of the
above, please consult with staff first so that you
do not compromise their work!**

Whatever form energy takes ...



...its environmental impact can be reduced by

Good housekeeping

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Lighting

Ensure all fluorescent lights are switched off when not required

The power used to light a college library could drive a large family car at 80 mph.

Make someone responsible for switching off lights in areas that are not in use

Label all light switches to indicate which lights they control.

Report faulty lighting promptly

A flickering tube uses more electricity and is a contributing factor to 'sick building syndrome'.

Equipment

Check whether equipment can be switched off when not in use

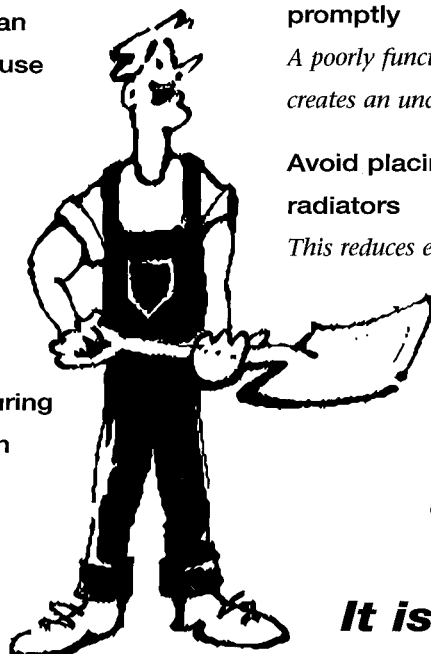
If you are not sure yourself, ask.

Switch off PCs, VDUs and printers when not in use

A PC left on overnight for a week uses enough energy to produce 4000 pages of laser-printed text.

If your PC must be left on during the day, switch off the screen

This saves more than 50% of the energy.



Switch off photocopiers at night and when not in use during the day

A photocopier left switched on overnight uses enough energy to make 5300 photocopies.

Heating

Check that windows are not opened to avoid overheating during winter

Report doors and windows that do not seal correctly when closed

Do not use portable heaters

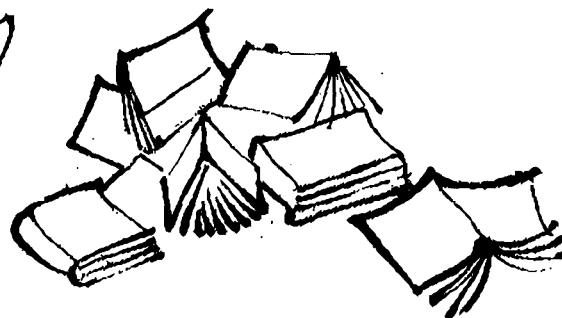
They are expensive to operate and may also contravene health and safety regulations.

Report heating and ventilation problems promptly

A poorly functioning system wastes energy and creates an uncomfortable environment.

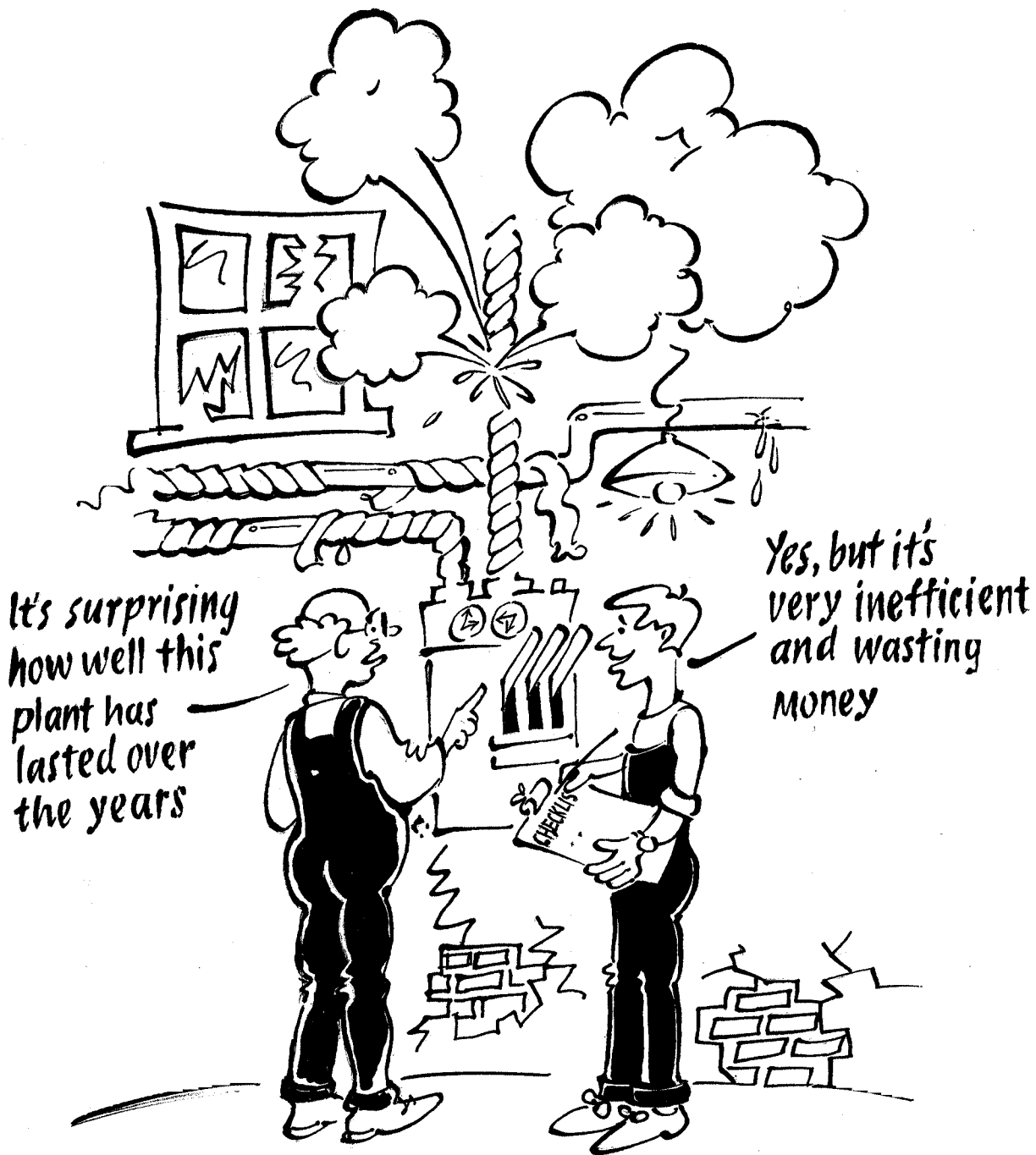
Avoid placing desks and chairs against radiators

This reduces efficiency and wastes energy.



**It is a myth that it is
cheaper to leave fluorescent
lights on permanently!**

Does it work as intended?



Maintenance

is an important part of good housekeeping

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Building fabric

Ensure all building fabric is in a good state of repair

Make sure that door closers work properly and there are no hooks for holding doors open. Also ensure windows close without gaps – draughts lose energy directly but also cause occupants to request higher temperatures.

Get windows cleaned on a regular basis to maximise daylighting

Even a small amount of soiling of the windows blocks valuable daylight.

When refurbishing interiors select colours with care

Light-coloured surfaces improve illumination levels.

Lighting

Clean lamps and luminaires regularly and replace them at the manufacturer's recommended intervals

A dirty diffuser or reflector can cut light output by 20%.

Replace 38 mm diameter fluorescent tubes in switch-start fittings with 26 mm diameter high-efficiency triphosphor tubes

26 mm tubes use about 8% less electricity and are cheaper to buy.

Building Energy Management Systems (BEMS)

A BEMS can help plant run to its planned efficiency – check that it is operating correctly

Heating plant

Work within the discipline of a planned maintenance programme

Preventive maintenance will reduce the possibility of failure or performance degradation:

- ensure that all motorised valves and dampers open fully and close without sticking
- replace filters at the manufacturer's recommended intervals
- clean heat exchanger surfaces, grilles and vents
- record the time and nature of corrective action
- ensure installation and service records are easily available.

Service boiler plant and check combustion efficiency regularly

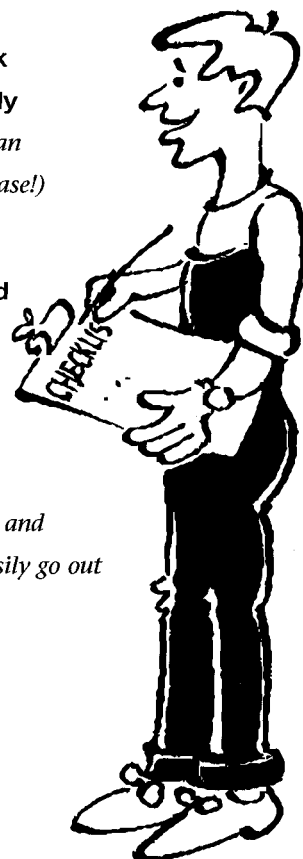
A small change in boiler efficiency can cause a significant increase (or decrease!) in fuel bills.

Monitor time, temperature and pressure controls regularly

Poor control costs money and ineffective sensors can be dangerous.

Check calibration of controls

Check thermostats are set accurately and are working correctly, as they can easily go out of calibration.



Whatever form the energy takes...



...savings can always be made

educated energy

Heating

Look out for the use of portable heaters

They are expensive to operate and may also contravene health and safety regulations.

Discourage the use of radiators to dry clothing

This is very wasteful of energy!

Check the heat distribution system regularly

Leaks, damaged insulation, trapped air and obstructions behind radiators reduce efficiency.

Kitchens

Check periodically that kettles in communal kitchens have automatic switch-off devices that work

Check that cookers and hot-plates are turned off when not in use

When buying or leasing new equipment and appliances, compare their energy consumption figures

These can vary considerably from model to model.

Hot water

If the water temperature seems to be too high report it

For washing hands and for washing utensils it should be 50°C or less. Avoid the hottest wash cycles in washing machines (40°C is normally hot enough.)

Remind students to turn off showers and taps

A hot tap left running for one hour uses £1.50 of electricity.

Repair dripping taps and leaks

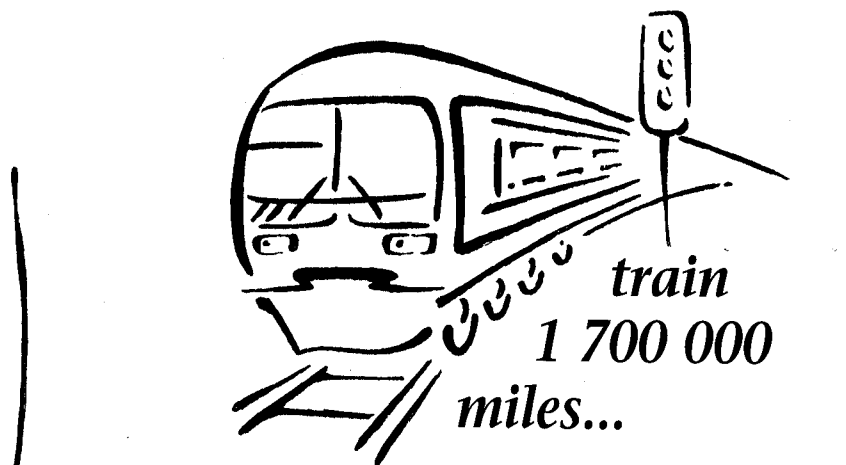
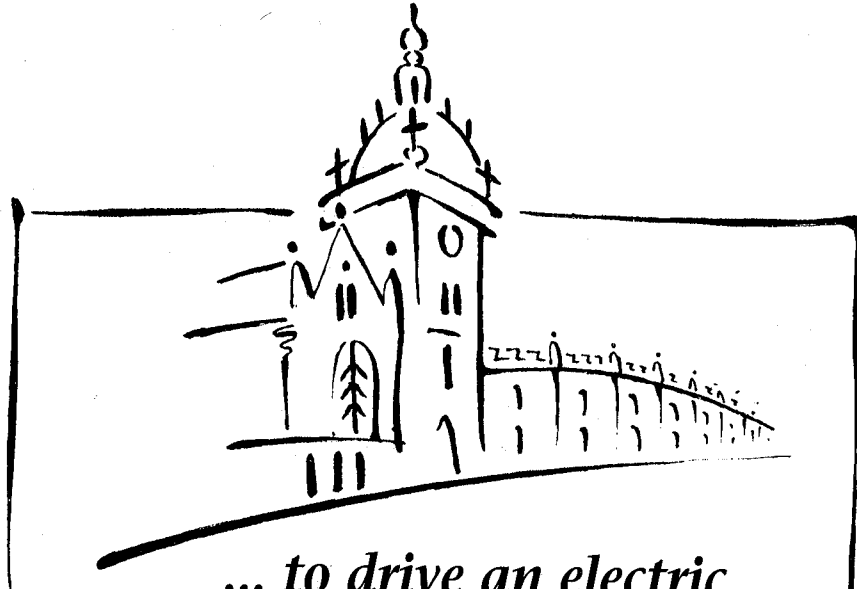
A dripping tap can waste 10 000 litres of water a year. A hot tap left running for one hour uses £1.50 in electricity – the price of A PINT OF BEER.

Where spray taps are not installed check that all hand basins have plugs and chains

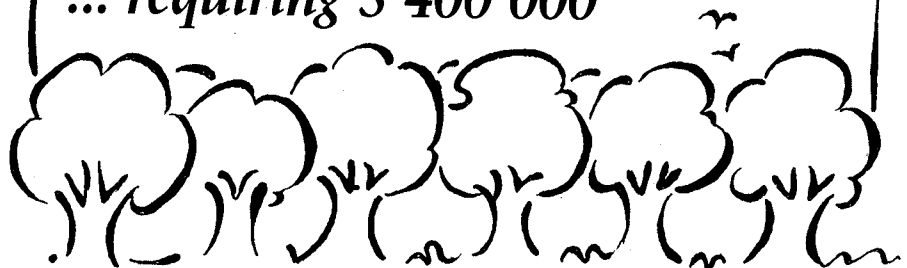
Lights and equipment

Remind students to use lights and appliances sensibly

*A large university uses enough
electricity annually...*



... requiring 5 400 000



trees to fix the CO₂ produced

educated energy

Make a commitment to energy efficiency

**Formally endorse energy good housekeeping
in your college**

*In a busy environment, staff will undertake good
housekeeping only if it is seen to be actively
supported by senior management.*

**Give support and assistance to your
energy manager**

*With support from senior management the energy
manager will be more effective.*

**Spread the ownership of the energy
opportunity as widely as possible**

*Explain to all groups of staff how they are
responsible for good housekeeping practice.*

**Allocate appropriate resources to the good
housekeeping programme**

*You will not have to
spend anything other
than time on
implementing good
housekeeping.*



**Create paths of communication between
different staff**

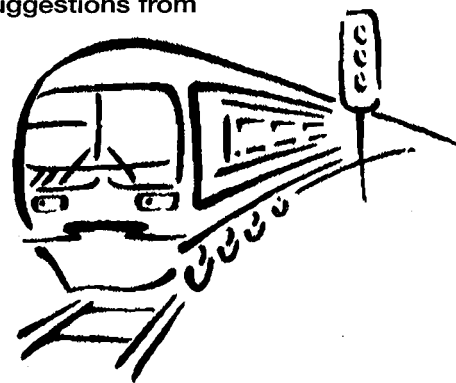
*Encourage staff from different departments to meet
and compare notes and methods.*

Review levels of motivation periodically

*Are targets still being achieved or does the
programme need to re-establish momentum?*

**Act on appropriate suggestions from
members of staff**

*People need to see their
suggestions acted upon,
otherwise they will
lose interest.*



**Be aware of
motivational issues**

*Each group of staff may
appreciate different aspects of savings made – in
terms of money, energy or environment.*

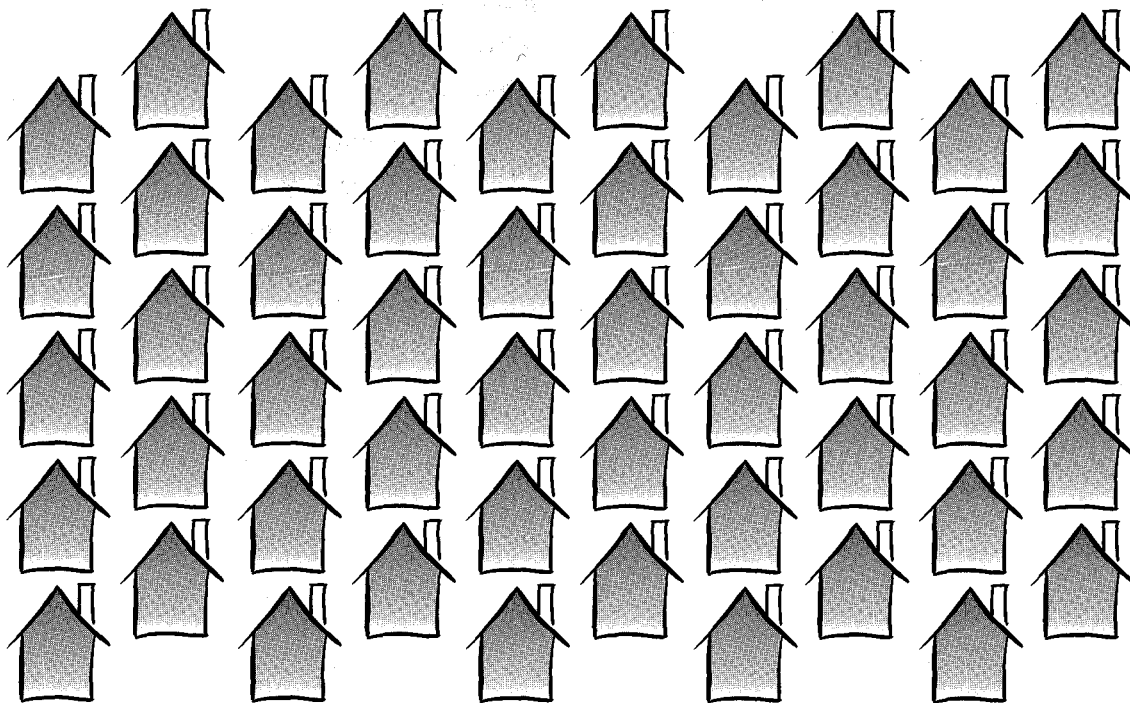
**Managing energy is as important as
managing any other resource**

*Careless use of staff time is a situation that
management sets out to control; careless use of
energy should also be seen as a management issue.*



sports facilities

The average dry sports centre uses as much energy as 50 houses



Good housekeeping
can save between 10%-20% of this energy

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Heating

Check that thermostats are set correctly and are working properly – different activities require different temperatures

For energetic sports 15°C is required – any warmer and the occupants will find it too hot. Overheating by 1°C increases the heating cost by between 6% and 10%.

Check that staff and facility users are closing windows and doors, especially external doors

Report windows and doors that do not seal when closed.

Lighting

Switch off fluorescent lights in areas that are not in use, or which have enough daylight for the activities taking place

It is not true that fluorescent lights use more energy if they are switched on and off frequently – if a room is going to be unoccupied for more than five minutes...SWITCH THE LIGHTS OFF!

Hot water

Ensure that all showers have timer controls so they cannot be left running

The cost of wasting the energy is compounded by the cost of the water.

Report and repair taps that do not close properly

A dripping tap can waste 10 000 litres of water a year. A hot tap left running for one hour uses £1.50 in electricity.

Appliances

When leasing or buying vending machines, ask for the energy consumption figures

Make sure that small quantities of water are heated only on demand when a drinks machine is used outside popular hours.

Building services plant

Liaise with the maintenance staff to monitor the following:

- **Boilers** – check regularly and service annually – an inefficient boiler will cost more to run.
- **Controls** – check all time, temperature, humidity and pressure controls and sensors annually. Remember, poor control costs money and ineffective sensors can be dangerous.
- **Mechanical ventilation** – inspect external grilles every 6 months, internal grilles every 12 months, check filters every 6 months, check fans every 3 months, check ductwork annually, and check dampers every 3 months.

Wherever you work...



*...undertake a programme of
good housekeeping*

educated energy

Electricity use for lighting and appliances is responsible for about a quarter of the energy costs of this college. It is also responsible for the emission of large quantities of carbon dioxide (CO₂), the main greenhouse gas.

Lighting

Switch off lighting in teaching areas at the end of each occupancy period

Leaving lights on even in a small teaching area can cost more than £200 per year.

Heating

Report any heating problems to your estates department

Being too hot or too cold should be solved by adjusting the heating system – opening windows or using portable heaters wastes energy and is expensive.

Equipment

Switch off PCs, VDUs and printers when you are not using them

A typical PC left on all the time would result in CO₂ emissions of 0.8 tonnes annually.

Switch off photocopiers, where appropriate, when you are not using them

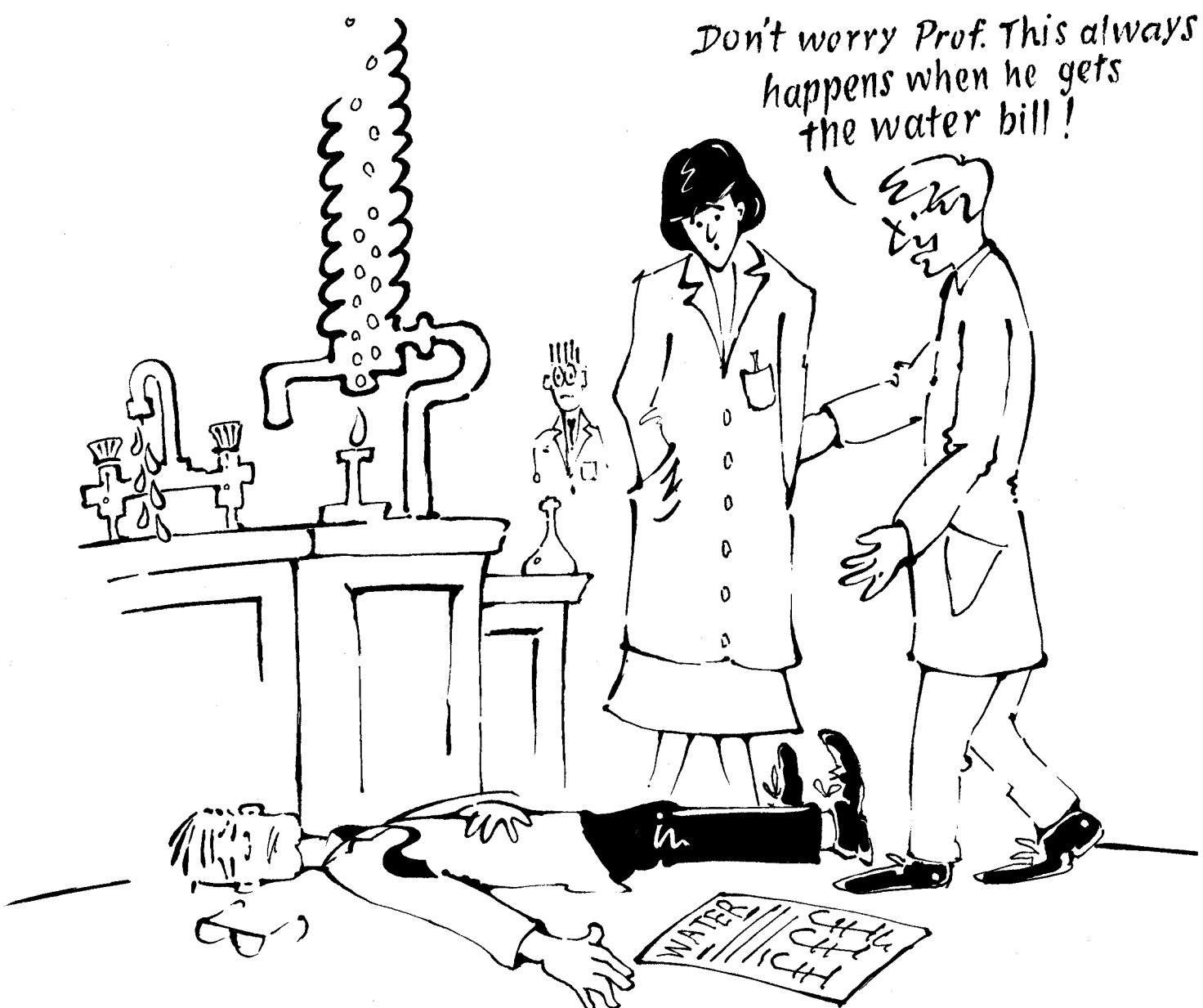
A photocopier left on over night uses enough energy to make 5300 photocopies.

Switch off non-essential equipment at the end of each occupancy period

Introduce a 'switch off' policy and agree who is responsible for switching off each item of shared equipment at the end of the working day.

Specify energy-efficient computers and equipment for your department





educated energy

Domestic hot water

Ensure all showers have timer controls so they cannot be left running

The cost of wasting the energy is compounded by the cost of the water.

Report and repair taps that do not close properly

A dripping tap wastes 10 000 litres of water a year – a hot tap left running for one hour costs £1.50.

Laboratories

Avoid using water vacuum pumps unnecessarily

They use large quantities of water.

Do not use distilled water when it is not required

It is expensive to produce.

Water-cooled equipment

Reduce the water supply to water-cooled equipment to the minimum required to achieve adequate cooling.

Catering

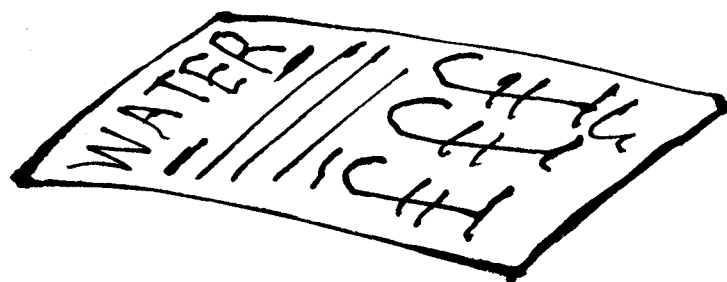
Do not wash utensils or vegetables under running taps

Leave utensils to soak, and minimise water use for vegetable washing.

Sports facilities

Avoid using hoses for floor washing unless absolutely necessary

A hose discharges a large volume of water.



***Water is expensive –
be careful not to waste it!***

FURTHER READING

Higher Education Funding Council for England *et al.* Energy Management Study in the Higher Education Sector – Management Review Guide. HEFC, Bristol, May 1996

University of Edinburgh. Educated Energy Management – Studies in the effective management of energy resources in educational buildings. University of Edinburgh, Edinburgh, 1991

DETR ENERGY EFFICIENCY BEST PRACTICE PROGRAMME DOCUMENTS

The following Energy Efficiency Best Practice programme documents are available from BRECSU Enquiries Bureau (see below for contact details).

Energy Consumption Guide

- 54 Energy consumption in further and higher education – cost-effective low energy buildings

Introduction to Energy Efficiency

- 5 Further and higher education

General Information Reports

- 12 Organisational aspects of energy management. Energy management guide
13 Reviewing energy management

Good Practice Guides

- 75 Financial aspects of energy management in buildings – a summary
172 Marketing energy efficiency – raising staff awareness
200 A strategic approach to energy and environmental management
207 Cost-effective low energy buildings in further and higher education

Good Practice Case Studies

- 16 Energy efficiency in offices. Heslington Hall, University of York
42 Energy efficiency in higher education buildings: condensing gas boilers
150 Energy management. Manchester University
334 The benefits of including energy efficiency early in the design stage – Anglia Polytechnic University
335 Investment in energy efficiency at the University of Warwick
336 Energy efficiency in further and higher education – monitoring and targeting, University of Wales, Cardiff

The Department of the Environment, Transport and the Regions' Energy Efficiency Best Practice programme provides impartial, authoritative information on energy efficiency techniques and technologies in industry and buildings. This information is disseminated through publications, videos and software, together with seminars, workshops and other events. Publications within the Best Practice programme are shown opposite.

For further information on:

Buildings-related projects contact:
Enquiries Bureau

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Internet **ETSU** – <http://www.etsu.com/eebpp/home.htm>

Industrial projects contact:
Energy Efficiency Enquiries Bureau

ETSU

Harwell, Oxfordshire
OX11 0RA
Tel 01235 436747
Fax 01235 438066
E-mail etsuenq@aeat.co.uk

Energy Consumption Guides: compare energy use in specific processes, operations, plant and building types.

Good Practice: promotes proven energy efficient techniques through Guides and Case Studies.

New Practice: monitors first commercial applications of new energy efficiency measures.

Future Practice: reports on joint R&D ventures into new energy efficiency measures.

General Information: describes concepts and approaches yet to be established as good practice.

Fuel Efficiency Booklets: give detailed information on specific technologies and techniques.

Introduction to Energy Efficiency: helps new energy managers understand the use and costs of heating, lighting etc.